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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Thomas Fuehrer

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EXAMINER

JOO, JOSHUA

ART UNIT

PAPER NUMBER

2154

DATE MAILED: 07/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/034,056	Applicant(s) FUEHRER ET AL.	
	Examiner Joshua Joo	Art Unit 2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Amendment filed 4/5/06***

1. Claims 1-34 are presented for examination.

***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/5/06 has been entered.

***Claim Rejections - 35 USC § 101***

3. Claims 19-21 are rejected under 35 U.S.C. 101 because the invention is not limited to tangible embodiments (e.g., Computer program). As such, the claim is not limited to statutory subject matter and is therefore non-statutory.

***Claim Rejections - 35 USC § 112***

4. Claims 1-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- i) Regarding claims 1, 15, 17, 18, and 19, the claims states the limitation of "determining **the correction value** in the at least two stations of the distributed bus system, as a function of the correction target value". Because of the limitation of "**the** correction value", it is not clear if the correction value determined in the at least two stations are of the same value or if the correction value determined in each station is different, thus unique, for each station. If the value is the same, it is not clear as to why all the stations

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would generate the same value as one station may determine and transmit the "the correction value" to the other nodes.

- ii) Regarding claim 18, the limitation of "memory arrangement" is not clear and renders the claim as indefinite because it is not clear as to what "arrangement" is referring to. For example, "memory arrangement" may refer to a medium, program, etc...

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3-4, 6, 9, 11-15, 17-19, 22-23, 25, 28, 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Esker, US Patent #6,535,926 (Esker hereinafter), in view of Gonzalez, US Publication #2002/0129291 (Gonzalez hereinafter).

7. As per claims 1, 15, 17, 18, and 19, Esker teaches substantially the invention as claimed for synchronizing the times of computing nodes with an external reference time. The computing nodes, comprising of CPUs, are data or signal processing devices, which are connected in bus, Esker's teachings comprising:

synchronizing a common global time base with an external reference time at a predefinable instant for the at least two stations of the distributed bus system by synchronizing, in the at least two stations of the distributed bus system, at a predefinable instant, the common global base with the external reference time as a function of a correction value and the common global time base (Col 2, lines 45-50; Col 3, lines 25-32, 44-50. Receive periodic signals for synchronization.), wherein the synchronizing includes:

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receiving from a source external to the bus system a time signal of the external reference time at least one of the at least two stations (Col 5, lines 37-47. Receive reference pulse from GPS receiver. Col 1, lines 33-36; Col 5, lines 1-7. Bus.),

based on a content of the time signal, determining, in the at least one of the at least two stations, the correction target value between a received time signal and the common global time base (Col 5, lines 45-60. Determine snapshot time value.),

sending the correction target value to other ones of the at least two stations of the distributed bus system (Col 6, lines 1-5, 26-29. Send snapshot time value to other controller on the network.), and

determining the correction value in the to other ones of at least two stations of the distributed bus system, as a function of the correction target value (Col 6, lines 30-34. Determine error value.), and

providing the common global time base that is synchronized with the external reference time at the predefinable instant for the at least two stations of the distributed bus system (Abstract; Col 6, lines 38-40; Claim 1. Error value used to correct value of the clock. Col 2, lines 45-50; Col 3, lines 25-32, 44-50. Receive periodic signals for synchronization.).

8. Esker teaches substantial features of the claimed invention including determining a correction value for the other one of the at least two stations receiving the correction target value. However, Esker does not teach of determining the correction value in the station receiving the external time reference.

9. Gonzalez teaches a system for time synchronization, wherein the device receives an external time clock, determines an error value, and synchronizes time based on the error value (Claim 8).

10. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Esker and Gonzalez because the teachings of Gonzalez for device receiving an external time clock to determine an error value and synchronize its clock using the error value would improve the system of Esker by allowing the controller receiving the external clock to determine errors and synchronizing its own time on the basis of the errors values.

11. As per claims 3 and 22, Esker teaches the invention, wherein the correction target value is sent to the other ones of the at least two stations periodically (Col 3, lines 23-28. Receive periodic reference signals. Col 5, lines 45-49. Reference signal used to generate snapshot time value.).

12. As per claims 4 and 23, Esker teaches the invention, wherein the correction target value is sent to the other ones of the at least two stations if the correction target value is other than zero (Col 6, lines 1-5. Transmit time message containing snapshot time value.).

13. As per claims 6 and 25, Esker teaches the invention, wherein the correction target value is contained in a separate message sent to the other ones of the at least two stations of the distributed bus system (Col 6, lines 1-5. Time message containing snapshot time value.).

14. As per claims 9 and 28, Esker and Gonzalez teaches the invention, wherein the correction value is determined, in the at least two stations of the distributed bus system, using error correction as a function of the correction target value (Esker: Col 6, lines 26-32. Gonzalez: Claim 8. Determine error value.).

15. As per claims 11 and 30, Esker teaches that the error value may be used to correct the clock by changing the clock by the amount of error value (Col 6, lines 38-41). However, Esker does not explicitly teach the method of claim 1, wherein the common global time base is synchronized with the external reference time by adding the correction value to the common global time base.

16. Nonetheless, since Esker teaches of changing the clock based on the amount of the error value, it would have been obvious to one of ordinary skill in the art at the time the invention was made to synchronize the common global time base by adding the correction value, i.e. error value, to the common global time base because using the correction value to adjust the clock was known and doing so would provide an alternative method of utilizing the correction value for time synchronization.

17. As per claims 12 and 31, Esker teaches that the error value may be used to correct the clock by changing the clock by the amount of error value (Col 6, lines 38-41). However, Esker does not teach the method of claim 1, wherein the common global time base is synchronized with the external reference time by multiplying the correction value by the common global time base.

18. Nonetheless, since Esker teaches of changing the clock based on the amount of the error value, it would have been obvious to one of ordinary skill in the art at the time the invention was made to synchronize the common global time base by multiplying the correction value, i.e. error value, to the common global time base because using the correction value to adjust the

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clock was known and doing so would provide an alternative method of utilizing the correction value for time synchronization.

19. As per claims 13 and 32, Esker teaches the invention, wherein the predefinable instant for synchronizing the common global time base with the external reference time is explicitly predefined (Col 2, lines 45-50; Col 3, lines 25-33, 44-50. Receive periodic signal for synchronizing clocks.).

20. As per claims 14 and 33, Esker teaches the invention, wherein synchronization of the common global time base with the external reference time is trigger by transmitting the correction value to a synchronization algorithm at an explicitly predefined instant (Col 6, lines 1-5. Transmit time message.).

21. Claims 2, 5, 16, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Esker and Gonzalez, in view of Turski, US Patent #5,402,394 (Turski hereinafter).

22. As per claims 2 and 16, Esker teaches of triggering synchronization by the detection of the external reference signal (Col 3, lines 30-34). However, Esker does not teach the invention, wherein a synchronization of the common global time base with the external reference time is triggerable by comparing the common global time base with the external reference time.

23. Turski teaches of synchronization by comparing the local clock with the external clock (Col 5, lines 49-50; Col 8, lines 17-24.).

24. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Esker, Gonzalez, and Turski because all three teachings deal



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with time synchronization. Furthermore, the teachings of Turski for synchronization by comparing the local clock and the external clock would improve the system of Esker and Gonzalez by allowing the controller to calculate its own time with reference to the external time (Col 8, lines 21-24).

25. As per claims 5 and 24, Esker does not teach the invention, wherein the correction target value is sent to the other ones of the at least two stations upon a request by one of the other ones of the at least two stations.

26. Turski teaches a system for time synchronization, wherein node requests time synchronization and receiving a synchronization object (Col 6, lines 4-7; Col 8, lines 1-4).

27. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Esker, Gonzalez, and Turski because the teachings of Turski to request time synchronization and receive a synchronization object would improve the system of Esker and Gonzalez by allowing a controller to control its time synchronization without waiting for the periodic correction target value.

28. Claims 7, 8, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Esker and Gonzalez, in view of Kubala et al, US Patent #5,802,354 (Kubala hereinafter).

29. As per claims 7 and 26, Esker does not teach the method of claim 1, wherein the correction target value is contained in a test message of the distributed bus system that is sent to the other ones of the at least two stations.

30. Kubala teaches the concept of transmitting test data to nodes (Col 5, lines 21-31, 55-65).

31. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Esker, Gonzalez, and Kubala because the teachings of Kubala to transmit test data to nodes would improve the system of Esker and Gonzalez by allowing the controllers to be synchronized to a test clock value (Col 2, lines 33-46).

32. As per claims 8 and 27, Esker teaches of transmitting correction target values. However, Esker does not teach teaches the invention, wherein the correction target value is contained in a test data present in a data message of the distributed bus system that is sent to the other ones of the at least two stations.

33. Kubala teaches the concept of transmitting test data to nodes (Col 5, lines 21-31, 55-65).

34. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Esker, Gonzalez, and Kubala because the teachings of Kubala to transmit test data to nodes would improve the system of Esker and Gonzalez by allowing the controllers to be synchronized to a test clock value (Col 2, lines 33-46).

35. Claims 10 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Esker and Gonzalez, in view of Walter et al, US Patent #4,980,857 (Walter hereinafter).

36. As per claims 10 and 29, Esker does not teach the method of claim 9, wherein the correction value is determined, in the at least two stations of the distributed bus system, using Byzantine error correction as a function of the correction target value.

37. Walter teaches using Byzantine data to check for occurrences in time error during a synchronization process for a multiple node processing system (Col 49, lines 21-24, 51-57).

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38. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Esker, Gonzalez, and Walter because all the inventions deal time synchronization of nodes. The teachings of Walter to use Byzantine error correction would improve the system of Esker and Gonzalez by providing a specific time correction method and the detection of timing errors (Col 49, lines 51-57).

39. Claims 20, 21 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Esker and Gonzalez, in view of Mincher et al, US Patent #5,408,506 (Mincher hereinafter).

40. As per claims 20, 21, and 34, Esker does not explicitly teach the invention, wherein the memory arrangement includes one of a read-only memory, a random-access memory, and a flash memory.

41. Mincher teaches of a distributed time synchronization system, where each node within the system comprises RAM and ROM for storing application programs (Col 6, lines 13-15; Col 6, lines 24-26).

42. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Esker, Gonzalez, and Mincher because all three teachings deal with time synchronization. Furthermore, the teachings of Mincher for a node to comprise RAM and ROM would allowing the nodes in Esker and Gonzalez's system to store information and process tasks (Col 6, lines 27-28; Col 6, lines 36-41). Furthermore, flash memory is a well type of memory in the art, therefore it would have been obvious to implement flash memory because doing so would provide a writable nonvolatile storage for storing applications.

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***Conclusion***

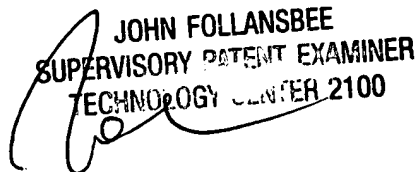
43. A shortened statutory period for reply to this Office action is set to expire THREE MONTHS from the mailing date of this action.

44. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Joo whose telephone number is 571 272-3966. The examiner can normally be reached on Monday to Thursday 8AM to 5PM and every other Friday.

45. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John A. Follansbee can be reached on 571 272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

46. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

June 20, 2006  
JJ

JOHN FOLLANSBEE  
SUPERVISORY PATENT EXAMINER  
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